

Optional Assignment 2: Exploring ChatGPT

Objective: The goal of this assignment is to familiarize you with the GPT architecture, set up your development environment, and start experimenting with prompt engineering techniques using the ChatGPT API. This hands-on exercise will lay the groundwork for more advanced tasks in the upcoming weeks.

Steps to Complete the Assignment:

Part 1: Introduction to the GPT Architecture

1. Read About GPT Architecture:

- Review the provided material on GPT architecture, including its key components such as tokens, transformer models, and attention mechanisms.
- Optional: Watch the supplementary video on the evolution of GPT models from GPT-2 to GPT-4.

2. Reflection:

- Write a brief reflection (250-300 words) summarizing your understanding of the GPT architecture. Highlight any key concepts or insights that stood out to you.

Part 2: Setting Up Your Development Environment

1. Install Python and Required Libraries:

- Ensure you have Python installed on your system. If not, download and install the latest version from python.org.

Install the OpenAI Python package by running the following command in your terminal or command prompt:

bash

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```
pip install openai
```

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2. Obtain API Access:

- If you don't already have access to the OpenAI API, sign up for an API key at [OpenAI's website](https://openai.com). This key will be needed to interact with the GPT model.

3. Test the Setup:

Write a simple Python script that uses the OpenAI API to generate a text completion. Here's an example of what your script might look like:

python

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```
import openai
```

```

openai.api_key = 'your-api-key-here'

response = openai.Completion.create(
    engine="text-davinci-003",
    prompt="Explain the importance of prompt engineering in AI.",
    max_tokens=100
)

print(response.choices[0].text.strip())

```

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- Run the script to ensure everything is set up correctly. If you encounter any issues, refer to the troubleshooting guide provided in the course materials.
- 4. **Document Your Setup Process:**
 - Write a brief (150-200 words) summary of your experience setting up the development environment. Include any challenges you faced and how you overcame them.

Part 3: Experimenting with Prompt Engineering

1. **Understand Prompt Engineering:**
 - Read the provided resources on prompt engineering. Focus on understanding how the phrasing of a prompt can influence the AI's response.
2. **Experiment with Different Prompts:**
 - Using the ChatGPT API, experiment with at least three different prompts. For each prompt, generate responses and observe how changes in wording, context, or specificity affect the output.
 - Example prompts to experiment with:
 - "Describe the process of natural language processing."
 - "List the steps involved in deploying a GPT model."
 - "What are the ethical considerations when using AI for customer support?"
3. **Analyze the Results:**
 - Compare the outputs generated from the different prompts. Write a brief analysis (300-400 words) discussing the variations in the responses. Consider aspects such as accuracy, relevance, and creativity of the outputs.
4. **Share Your Insights:**
 - Summarize your findings in a short report (approximately 500 words). Discuss how you might apply these insights in future assignments or projects.

Submission Guidelines:

- These assignments are totally optional and do not have to be submitted! If you'd like, feel free to submit them to the week two discussion forums to get some feedback from your classmates